Tuberculin Sensitivity in Co. Fermanagh, N. Ireland, 1952-55

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THE remarkable scarcity of new cases of tuberculosis throughout Britain during the past four or five years, has in Northern Ireland been most pronounced in country districts. County Fermanagh is one of these districts in which a very low tuberculin reactor rate has already been recorded (Warmington, 1952). In the period of falling incidence a corresponding reduction in the numbers tuberculin positive would be expected, and of this the present survey is a record.

The groups studied are the same as in the 1949-51 survey, namely:

1. Attenders at Enniskillen Chest Clinic - - - - 965
2. Boys from Fermanagh homes attending a public school in Enniskillen 58
3. Employees in an Enniskillen factory (some tested in 1956) - - 328

TUBERCULIN TESTS USED.

The accuracy of the Heaf multiple puncture test using pure Old Tuberculin (O.T.) as measured against the Mantoux test using O.T. 1/100 as the standard test has been demonstrated in many studies. Irvine (1955) using O.T. on 243 persons found 86 per cent. accuracy for the Heaf test. Townsend (1954) with 178 persons aged 18-21 years reported 88.2 per cent. accuracy. Calwell (1954) on 1,345 children aged 0-16 years in Belfast, immediately Mantoux tested the 985 non-reactors to the Heaf test, and only 5 (0.5 per cent.) showed a positive Mantoux test. This gives 99.5 per cent. accuracy for the Heaf test at this age. Bowen (1955) using P.P.D. and Gifford (1955) also report similar degrees of accuracy. Irvine's figure (86 per cent.), the lowest reported, was chosen to avoid exaggeration in correcting our own Heaf results to conform to the Mantoux test using O.T. 1/100—the accepted standard for this as for most tuberculin surveys.

For internal comparison with my own earlier chest clinic results using the Mantoux test with O.T. 1/10,000, this test has of course again been employed in these patients.

METHOD OF ANALYSIS.

The size of samples recommended by Hill (1948) is 100 or more and not less than 50. This was achieved except for individual groups in the public school. Differences were considered significant statistically when found to be twice the standard error (σ).

RESULTS.

The Chest Clinic figures for both surveys are seen in Table I.

TABLE I.

Age	1949-51 Total No.	1949-51 Positive No.	1949-51 Positive %	1952-55 Total No.	1952-55 Positive No.	1952-55 Positive %
0-5	209	26	12.4	188	23	12.2
6-14	—	—	—	313	57	18
10-14	307	66	21.5	—	—	—
15-35	502	278	53.4	389	110	28.2
35+	183	115	62.8	75	35	46.7

In Table I no material reduction in the number of tuberculin reactors is seen under the age of 15. The high percentage of contacts in this group probably explains the failure to show a reduction in tuberculin positives. In 1949-51, 66.5 per cent. of the 0-5 year group and 55 per cent. of the 5-14 year group were contacts (unpublished Enniskillen Chest Clinic figures) and a similar proportion probably still holds. The fall in reactor rate in the oldest group (35 years and over) is significant ($2\sigma = 13.5$). The 15-35 year group of adolescents and young adults shows a large (25.2) and statistically significant ($2\sigma = 6.4$) reduction.

The Public Schoolboys.

The following table shows the 1953-4 results of Mantoux tests using O.T. 1/100 dilution :

TABLE II.

Enniskillen Town:	Total	Positive	%
53-54	10	8	80
49-51	40	20	50
Country Towns:			
53-54	20	1	5
49-51	73	21	29
Country Districts:			
53-54	58	7	12
49-51	56	8	14
Total:			
53-54	88	16	18
49-51	169	49	29

Comparison of the totals for the two surveys shows a reduction in 1953-4 which is just statistically significant ($2\sigma = 10.77$).

The Factory Survey.

Substantially the same rural-urban proportion (70 per cent. rural) and average age (males 26 and females 20 - 22.5 years) holds as in 1949-51. Males number 169 (131 Heaf tested in 1956), and females 238 (197 Heaf tested in 1956). The Heaf tested numbers positive were corrected to 86 per cent. (Irvine, 1955) of their orginal value before inclusion. The results of the 1949-51 and the present surveys are shown in Table III.

The number of tuberculin positive females was already very low at the date of the first survey and remains well below the male figure. Hence a dramatic drop would scarcely be expected in females and that found is just short of statistical significance, equalling 8.6 where 2σ is 9.4. For males in contrast, the drop in positive reactors is significant ($2\sigma = 10.6$) and so large (22) as to produce for the factory workers as a whole, a large (19.1) and statistically significant reduction in tuberculin reactors ($2\sigma = 8.0$).

Discussion.

An association between a reduction in an infectious disease like tuberculosis and a decreasing tuberculin reactor rate has an important implication : more and more people now free of tubercle are only so because they have not yet been infected. Partial reduction of infection offers only a limited type of protection. Yet the type of disease now being encountered is exactly the same as in the worst days of the

TABLE III.

Date of Survey	Total Tested		No. Positive		% Positive		Total M. and F. No. Positive	Total M. and F. % Positive
	M.	F.	M.	F.	M.	F.		
1949-51 ...	248	183	157	66	62.5	36	223	51.7
1952-55 ... (1956 Heaf)	131	197	53	54	40.5	27.4	107	32.6

nineteenth century. B.C.G. vaccination offers protection and is available for the tuberculin-negative majority. "Substantial proof," in the words of the N.I. Tuberculosis Authority's report (1956), of the value of B.C.G. vaccination in preventing tuberculosis is stated in the *B.M.J.* editorial (*B.M.J.*, 25th February, 1956) as being "beyond doubt." The proof referred to is the results of the Medical Research Council Tuberculosis Vaccination Trials (Hart, D'Arcy P., et al., 1956). Here 1.94 per 1,000 in the tuberculin negative unvaccinated group are shown to have developed tuberculosis, compared with under one-fifth of that number or only .37 per 1,000 amongst those who were given B.C.G. vaccination. Its use in specially exposed groups is practised by the writer. Such groups include contacts of the tubrculous case, emigrants, entrants to urban or industrial employment, and nurses. Educational propaganda might be specially directed to these. None of the many young persons encountered by the writer who emigrate from Fermanagh realized their need of B.C.G. vaccination. Hence it is believed that insufficient use is being made of available means of publicity such as wireless and the press.

Summary.

A statistically significant reduction in the number of tuberculin reactors in Co. Fermanagh between 1949-51 and 1952-55 was found in Clinic Attenders aged 15 years and over, amongst public school boys and in factory workers. The implication of this finding is discussed in relation to B.C.G. vaccination.

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REVIEWS

SURGERY IN INFANCY AND CHILDHOOD. By Matthew White, M.A., M.B., Ch.B., F.R.F.P.S.(Glas.), F.R.C.S.(Edin.), and Wallace M. Dennison, M.D., F.R.F.P.S.(Glas.), F.R.C.S.(Edin.), F.I.C.S. (Pp. xii + 444; figs. 266. 45s.) Edinburgh and London: E. & S. Livingstone, 1958.

Here is a clearly-written and compact account of the surgical problems of infancy and childhood. Although the book is intended primarily for senior (medical) students, it is likely to have a much wider appeal. All who deal with infants and children will appreciate the ease with which reliable information can be obtained on a wide variety of topics. In addition to valuable chapters dealing with abdominal and thoracic disease, there are comprehensive sections on orthopædic disorders, fractures, and plastic surgery. It is heartening to see needless circumcision condemned and the text here provides useful moral support for those who have to deal with parents anxious to have a child circumcised.

The necessity for conciseness in style has left little space for consideration of alternatives in treatment. For example, not all surgeons will agree that when strawberry birthmarks require treatment that radium is preferable to excision.

The illustrations, several of which are in colour, add considerably to the value of the book and the index is sufficiently detailed to allow easy reference.

The authors and publishers deserve praise for producing an attractive book at a reasonable price. B. T. S.

THE PHYSICAL TREATMENT OF VARICOSE ULCERS. By R. Rowden Foote, F.I.C.S., M.R.C.S., L.R.C.P., D.R.C.O.G. (Pp. xii + 126; figs. 88. 15s.) Edinburgh and London: E. & S. Livingstone, 1958.

In this small volume massage and exercises in the treatment of varicose ulcers is discussed. The various lesions are described, and surgery is considered. J. M. M.